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| Kevin S Dobson E I du Pont de Nemours & Company Legal Patents Wilmington, DE 19898 | | | | |
| EXAMINER | | | | |
| CHEUNG, WILLIAM K | | | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/501,598

Applicant(s)

RYMER ET AL.

Examiner

WILLIAM K. CHEUNG

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 11, 12, 26, 28, 30, 31, 33, 35-41, 46-55 and 58-82 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 11, 12, 26, 28, 30, 31, 33, 35-41, 46-55 and 58-82 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Request for Continued Examination

1. The request filed on February 12, 2009 for a Request for Continued Examination (RCE) under 37 CFR 1.53(d) based on parent Application No. 10/501,598 is acceptable and a RCE has been established. An action on the RCE follows.
2. The examiner acknowledges the receipt of the affidavits file January 27, 2009 and has considered it in the instant office action.
3. Claims 1, 2, 11-12, 26, 28, 30, 31, 33, 35-41, 46-55, 58-82 are pending.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

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3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claims 1, 2, 11, 12, 26, 28, 30, 31, 33, 35-41, 46-55, 58, 61-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gutweiler (US Patent 5,573,842) in view of Dauvergne (FR Patent 2,401,941, Abstract), and Shohi et al. (EP-1036775 A1), and further in view of Degeilh (US 4,696,971) and then in view of Masao et al. (JP08-337446), for the reasons adequately set forth from paragraph 4 of the office action of October 28, 2008.

1. (Currently Amended) A process for preparing a low color, polyvinyl butyral sheet for use in the manufacture of glass laminates comprising the steps:

(I) admixing polyvinyl alcohol, butyraldehyde, an acid or mixture of acids, water, and a surfactant selected from the group consisting of organic bisulfites, inorganic bisulfites and sulfosuccinates sodium dialkyl sulfosuccinate;

(II) stabilizing the mixture obtained in step (I) by (a) raising the pH of the mixture to at least pH 10, (b) isolating the polyvinyl butyral resin composition by draining the liquid, and (c) washing the polyvinyl butyral resin composition with neutral pH water;

(III) plasticizing the polyvinyl butyral resin composition with from about 30 to about 50 pph of plasticizer selected from the group consisting of triethylene glycol di(2-ethylhexanoate), tetraethylene glycol diheptanoate, dibutyl sebacate, and mixtures thereof, based on the dry weight of the resin;

(IV) mixing (a) a polyvinyl butyral bleaching compound selected from the group consisting of organic bisulfites, inorganic bisulfites and sulfosuccinates, and, optionally, (b) an antioxidant and a UV light stabilizer with the polyvinyl butyral resin composition; and

(V) extruding the polyvinyl butyral resin composition at a temperature of from about 175°C to about 225°C to obtain a polyvinyl butyral sheet having a glass transition temperature (T_g) of greater than about 32°C and a YID of less than about 12.

26. (Currently Amended) A process for preparing a low color, polyvinyl butyral sheet for use in the manufacture of glass laminates comprising the steps:

- (I) admixing polyvinyl alcohol, butyraldehyde, an acid or mixture of acids, water, and sodium ~~diethyl~~ dioctyl sulfosuccinate;
- (II) stabilizing the mixture obtained in step (I) by (a) raising the pH of the mixture to at least pH 10, (b) isolating the resin by draining the liquid, and (c) washing the resin with neutral pH water;
- (III) plasticizing the polyvinyl butyral resin composition with from about 30 to about 50 pph of plasticizer, based on the dry weight of the polyvinyl butyral resin, wherein the plasticizer is selected from the group consisting of

triethylene glycol di(2-ethylhexanoate), tetraethylene glycol diheptanoate, dibutyl sebacate, and mixtures thereof; and
- (IV) extruding the polyvinyl butyral resin composition at a temperature of from about 175°C to about 225°C to obtain a polyvinyl butyral sheet having a glass transition temperature (T_g) of greater than about 32°C and a YID of less than about 12.

66. (Currently Amended) A process for preparing a low color, polyvinyl butyral sheet for use in the manufacture of glass laminates comprising the steps:

- (I) admixing polyvinyl alcohol, butyraldehyde, an acid or mixture of acids, water, and sodium dialkyl sulfo succinate ~~a surfactant selected from the group consisting of organic bisulfites, inorganic bisulfites and sulfo succinates;~~
- (II) stabilizing the mixture obtained in step (I) by (a) raising the pH of the mixture to at least pH 10, (b) isolating the resin by draining the liquid, and (c) washing the resin with neutral pH water;
- (III) plasticizing the polyvinyl butyral resin composition with from about 30 to about 50 pph of plasticizer selected from the group consisting of diesters obtained by (a) the reaction of triethylene glycol or tetraethylene glycol with aliphatic carboxylic acids having from 6 to 10 carbon atoms and (b) the reaction of sebacic acid with aliphatic alcohols having from 1 to 18 carbon atoms, and mixtures thereof, based on the dry weight of the polyvinyl butyral resin; and
- (IV) extruding the polyvinyl butyral resin composition at a temperature of from about 175°C to about 225°C to obtain a polyvinyl butyral sheet having a glass transition temperature (T_g) of greater than about 32°C and a YID of less than about 12.

The prior art to Gutweiler relates to a plasticized PVB film comprising a plasticizer, PVB, and an optical brightener in an amount effective to improve the optical properties and reduce the yellowing of the film which is useful as intermediate film in multilayer laminated glass panes (Abstract). Gutweiler's PVB sheet with a yellowness index of less than 2 (column 8, lines 4-5) is made by blending PVB with 20-50 wt% of plasticizer (column 4, line 1) and extruding under temperature of 140-250° C (column 4, line 12). The PVB has a content of vinyl alcohol monomer units of preferably 17-29 wt%

(column 3, lines 41-43). Gutweiler (col. 3, line 59-62) clearly disclose the incorporation of the plasticizers as claimed.

The difference between the invention of claims 1, 2, 11, 12, 26, 28, 30, 31, 33, 35-41, 46-55, 58, 61-82 and Gutweiler et al. is that Gutweiler is silent on the details of PVB synthesis, and is also silent on the use of sulfosuccinate compounds as surfactants.

Dauvergne teaches a process for preparing PVB comprising adding PVA, acid catalyst, and an emulsifier (i.e. a surfactant) into a reactor with stirring, introducing butyraldehyde gradually, then, after adjusting pH to 9-11, separating the resultant PVB from the mixture (Abstract). Although Dauvergne does not mention the wash step after PVB is separated from mixture as required by applicant's claim 1, the prior art to Shohi et al. provides an interlayer film for laminated glass containing PVB resin (Abstract and page 3, [0016]), where the PVB synthesis includes a step of reaction product wash with an excess of water in order to wash out the unreacted n-butyraldehyde and a neutralization of the hydrochloric acid catalyst with the common neutralizer (page 5, [0046]). Motivated by the expectation of success of obtaining a PVB resin with low residual monomers, it would have been obvious to one of ordinary skill in art to incorporate the washing step of Shohi et al. into the PVB preparation procedure of Dauvergne to obtain the PVB synthesis procedure as claimed.

Further, in light of the fact that Dauvergne teaches a detailed method of synthesizing PVB and Shohi et al. teach a similar PVB synthesizing process including a washing step, one having ordinary skill in the art at the time the invention was made

would appreciate such teaching and, thus, to incorporate Dauvergne's method in Gutweiler's process of making a similar PVB laminate in combining with the method as taught by Shohi, because Dauvergne further detailed Gutweiler's method of synthesizing PVB and Shohi teaches the benefit of including one extra step of product washing and all three prior arts relate to the same subject matter, i.e. making a PVB laminated glass.

As to the glass transition temperature of the PVB sheet, as discussed above, given the substantially identity in the plasticized PVB composition between the prior art and the present invention, it is the examiner's position to believe that the prior art composition must inherently possess the same T_g . Since the PTO does not have proper means to conduct experiments, the burden of proof is now shifted to the applicant to establish an unobviousness difference. In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977); In re Fitzgerald, 619 F.2d 67, 70, 205 USPQ 594, 596, (CCPA 1980).

Although the prior art references do not teach use of a specific surfactant or emulsifier in making PVB, Degeilh' 971 teaches a process for the preparation of a PVB including using sodium dioctyl sulfosuccinate (DOS), effective as an emulsifier (Abstract). DOS advantageously facilitates the after-treatment of the PVB to separate the product (col. 2, line 15-23; col. 3, lines 19-20). More benefits of using such DOS emulsifier are described at col. 3, lines 20-52.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include a surfactant, such as DOS, as taught by

Degeilh, in Gutweiler's PVB formulation in order to take the advantage of such surfactant disclosed by Degeilh to obtain applicants' claims 1, 2, 11, 12, 26, 28, 30, 31, 33, 35-41, 46-55, 58, 61-82.

As to claim 10, it is noticed that sodium dioctyl sulfosuccinate, i.e. DOSS, is used as an emulsifier by Degeilh in the process of making PVB film (Abstract), which reads on the instant claim 10. Even though Degeilh does not specify that DOSS can also be used as a bleach agent, such functionality must be inherently processed by this compound. Finding a new property of the compound and such a discovery does not constitute a new invention. The courts have held that the fact that a characteristic is a necessary feature or result of a prior-art embodiment is enough for inherent anticipation, event if that fact was unknown at the time of the prior invention. *In Toro Co. v. Deere & Co.*, 355 F.3d 1313, 1320, 69 USPQ2d 1584, 1590 (Fed. Cir. 2004);; and *In Atlas Powder Co. v. Ireco, Inc.*, 190 F.3d 1342, 1348-49 (Fed. Cir. 1999).

As to claims 11-12, Gutweiler's process of dissolving or suspending optical brighteners in the plasticizer, mixing the plasticizers and optical brighteners with PVB can be seen at column 2, lines 12-16, which meets the instantly claimed "wet process". Shohi et als' disclosure on page 5, [0047], meets the instantly claimed "dry process".

The difference between the invention of claims 1, 2, 11, 12, 26, 28, 30, 31, 33, 35-41, 46-55, 58, 61-82 and the prior art, Gutweiler, Dauvergne, Shohi et al., and Degeilh, is that they do not teach the intended use or the laminating step of the claimed invention.

However, Masao et al. (abstract; 0002) disclose an interlayer film for a laminated glass comprising a plasticizer and polyvinyl acetal resin. Further, Masao et al. (0026-0027) disclose that the more preferred plasticizer is triethylene glycol-di-2-ethylhexaote. Further, Masao et al. (0047) disclose the incorporation of indium oxide, tin oxide, and zinc oxide for heat ray reflexivity purposes while maintaining the transparency of the glass laminate. Motivated by the expectation of success of using an interlayer film composition that is substantially identical to the one as taught in Gutweiler, Dauvergne, Shohi et al., and Degeilh, it would have been obvious to one of ordinary skill in art to laminate the interlayer film as taught in Gutweiler, Dauvergne, Shohi et al., and Degeilh, to an automotive glasses to obtain the invention as claimed.

Response to Arguments

Applicant's arguments filed January 27, 2009 have been fully considered but they are not persuasive. Applicants argue that the declaration filed July 16 has adequately shown the criticality of the claimed "dialkyl sulfosuccinates" and "neutralizing to pH of no more than 5" in the reduced amount of defects. However, the examiner disagrees because the criticality of an invention must be demonstrated through comparative data which includes the compositions and processing steps to show the criticality of the claimed invention, not just by heresay.

Regarding applicants' argument that Degeilh teaches away from the instantly claimed invention because Degeilh teaches a process involving a step of neutralizing to a pH of no more than 5. However, the examiner disagrees because applicants must

recognize that Degeilh only teaches away of pH of no more than 5 when the product is used in applications where the ability to adhere to glass is critical. Further, applicants must recognize that Degeilh (col. 1, line 68 to col. 2, line 2) clearly discloses typically, this after-treatment is carried out in an aqueous medium under basic conditions, namely, at a pH between 9 and 11, which fully embracing the pH of at least 10 as claimed.

6. Claims 59-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gutweiler (US Patent 5,573,842) in view of Dauvergne (FR Patent 2,401,941), in view of Shohi et al. (EP-1036775 A1), in view of Degeilh (US 4,696,971), and further in view of Keppler (US 4,433,108), and then in view of Masao et al. (JP08-337446), for the reasons adequately set forth from paragraph 5 of the office action of October 28, 2008.

The prior art references to Gutweiler, Dauvergne, Shohi et al. and Degeilh are adequately presented previously in this Office Action and are incorporated herein by reference. The aforementioned prior art references do not teach the instantly claimed antioxidant compound, i.e. 2,2-methylenebis (6-t-butyl-4-methylphenol).

Shohi et al. disclose that an antioxidant, such as phenolic antioxidant, among other additives, is conventionally incorporated in an interlayer film for laminated glass of this kind (page 4, [0033] and [0036]), while the online product brochure from Great Lakes Chemical Co. provides a list of nineteen antioxidants under the phenolic antioxidants category including 2,2'-methylenebis (6-t-butyl-4-methylphenol), which meets the instantly claimed compound. Including a phenolic antioxidant is a common

practice in the art as clearly stated by Shohi et al. and finding a specific product from a chemical company's product brochure is well within the reach of a skilled person in the art. Therefore, it would have been obvious to those skilled in the art to employ such antioxidant in Gutweiler's PVB composition, motivated by a reasonable expectation of successfully obtaining the corresponding interlayer film containing PVB for laminated glass. Degeilh (col. 1, line 57-68; col. 2, line 15-23) clearly teach using sodium dioctyl sulfosuccinates as a surfactant or emulsifier.

The difference between the claims 59-60 and the rejected claim 58 is that Gutweiler, Dauvergne, Shohi et al. and Degeilh are silent on a process involving a bisulfite.

Keppler (col. 3, line 17-26) discloses the advantages of using a sodium bisulfite as a co-stabilizer with sodium dioctyl sulfosuccinates. Motivated by the expectation of success of using a sodium bisulfite as a co-stabilizer with sodium dioctyl sulfosuccinates, it would have been obvious to one of ordinary skill in art to in add a sodium bisulfite which generically include both organic and inorganic sodium bisulfites, to the emulsifier teachings of Degeilh to obtain the invention of claims 59-60.

Regarding feature "for use in the manufacture of glass laminates", applicants must recognize that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

Response to Arguments

Applicant's arguments filed January 27, 2009 have been fully considered but they are not persuasive.

Applicants argue that the affidavits filed January 27, 2009 has adequately shown the criticality of the claimed "dialkyl sulfosuccinates" and "raising the pH to at least 10" to reduce the amount of defects in the film samples. However, the examiner disagrees because the criticality of an invention must be demonstrated through comparative data which includes the complete compositions and processing steps disclosure to show the criticality of the claimed invention, not just by heresay. The affidavits filed in January 27, 2009 fail to indicate the amount of each components employed by the example and the comparative example. Therefore, the examiner has a reasonable basis to believe that the comparative data presented are not commensurate to the scope of the invention being claimed and the invention disclosed in the prior art.

Further, applicants must recognize that Degeilh (col. 1, line 68 to col. 2, line 2) clearly discloses typically, this after-treatment is carried out in an aqueous medium under basic conditions, namely, at a pH between 9 and 11, which fully embracing the pH of at least 10 as claimed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William K. Cheung whose telephone number is (571) 272-1097. The examiner can normally be reached on Monday-Friday 9:00AM to 2:00PM; 4:00PM to 8:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David WU can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/William K Cheung/
Primary Examiner, Art Unit 1796

William K. Cheung, Ph. D.
Primary Examiner
March 8, 2009